

SERUM ESTRADIOL AND PROGESTERONE CONCENTRATIONS
IN COWS WITH AND WITHOUT RETAINED PLACENTA

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SUMMARY

Serum samples from 8 Friesian cows with retained placenta and from 6 without retained placenta were analysed for estradiol 17B (E₂) and progesterone concentrations by radiolimmunoassay.

Results revealed that, mean E₂ values in the affected cows were higher than those of the unaffected, while progesterone levels did not differ significantly in both groups.

Data have suggested that the increased estrogen level before parturition, together, with fall in the progesterone levels might be involved in the incidence of retained placenta.

INTRODUCTION

Retention of the placenta was described as a common postpartum complication which affects dairy cattle (1). The predisposing factors were either hereditary, nutritional, hormonal, infection, circulatory disturbance, environmental or multifactorial (1). The incidence was relatively high in Iraq (2). The role of hormone factor was found to be closely associated with the incidence (3). In a previous work the relation of

blood estrogen and progesterone levels to the incidence was studied, no such work has been available in Iraq. Therefore, this experiment was designed to determine estradiol-17 B and progesterone concentrations in the serum of cows with and without retained placenta.

MATERIALS AND METHODS

Ten ml samples of blood were drawn from the jugular vein of 8 Friesian cows suffering from retained placenta (24-48 hours after parturition) and from 6 Friesian cows normally expelled their placentae (between 8-12 hours after parturition). Serum was separated by centrifugation at 1500 rpm for 10 minutes and stored at -20 °C until assayed.

Estradiol -17B (E₂) and progesterone concentrations were measured in the serum by radioimmunoassay.

For RIA of hormones a readily available kits (Amersham International PIC, England), antibody (Amerlex-M) and radioactive labeled hormone (Amerlex-M) were used. The assay based on competition between the labeled and the unknown hormone in the serum.

Standards were prepared by serially diluting (0.0-40 ng/ml) progesterone and (0.0-250 pg/ml) E₂ in 50 microlitre of serum in duplicate. Aliquots of 50 microlitre of the unknown serum samples were also prepared in duplicates. 500 microlitre of the radioactive hormone and 500 microlitre of the antibody were added to each tube. The tubes were mixed, allowed to settle at 19-25 °C for 2 hours and then centrifuged to separate the unbound hormone. The quantities of the hormones were measured in Gamma counter. (LKB).

Statistical analysis was done using (t) test (5).

RESULTS

Estradiol and progesterone values in the serum of cow with and without retained placenta are shown in Table (1).

The results indicated that mean E₂ and progesterone

levels in cows with retained placenta ranged between 4.687-205.878 pg/ml and 0.2-0.31 ng/ml respectively their means were 84.091 and 0.247 . These values in the cows without retained placenta were 4.841 -12.254 pg/ml and 0.214- 0.296 ng/ml respectively.

Estradiol values in cows with retained placenta were significantly higher than those in cows without retained placenta ($p < 0.05$) while progesterone values did not differ significantly in both groups ($p > 0.05$).

In the present study, serum progesterone concentrations did not differ in both groups. However , estradiol values were significantly higher in cows with retained placenta.

Table 1 : serum concentrations of estradiol -17 B and progesterone in cows with and without retained placenta.

Cows with retained placenta			Cows without retained placenta		
Cow's No.	estradiol pg/ml	progesterone ng/ml	Cow's No.	estradiol pg/ml	progesterone ng/ml
1284	203.680	0.2	605	5.171	0.296
838	14.751	0.265	1263	9.485	0.28
1513	46.727	0.31	662	4.973	0.28
571	4.687	0.27	1160	8.110	0.214
424	142.270	0.23	504	4.841	0.26
1118	17.778	0.26	2338	12.254	0.29
1243	9.69	0.227			
262	205.878	0.22			
$\bar{X} \pm$ S.E.	1	2	3	4	
	80.88 \pm	0.247 \pm	7.562 \pm	0.27 \pm	
	29.27	0.0111	1.099	0.012	
	xx	N.S.	xx	N.S.	

xx -Significant

N.S. Non significant

DISCUSSION

The fetal placenta is the source of estrogen in cattle (6). This could explain the high estrogen concentrations in the blood of cows with retained placenta. The increased estrogen levels before parturition together with fall in the progesterone levels may be the cause for retained placenta. Similar observations were also made when parturition was induced in cows by glucocorticoid injection accompanied with high incidence of retained placenta (7).

The variation in estradiol values between individual cows with retained placenta were attributed to the differences in time elapsed from retention of the placenta to the sampling.

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تركيز الايستراديول والبروجسترون في مصل الابقار
المحتبسة وغير المحتبسة المشيمة

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الخلاصة

تم قياس تركيز هرمون الاستراديول والبروجستون في مصل ٨ ابقار فريزيان محتبسة المشيمة و ٦ ابقار فريزيان غير محتبسة المشيمة بالطريقة الشعاعية المناعية. أظهرت نتائج القياس بأن اقيام تركيز الايستراديول في مصل الابقار التي تعاني من احتباس المشيمة اعلى من تلك التي طرحت مشائمها طبيعيا ولكن اقيام تركيز البروجستون لم تظهر فارقا معنويا مما يدل بأن التركيز العالي للايسترودجين والهبوط البطيء للبروجستون قد يكون سببا في احتباس المشيمة في الابقار التي درست.